APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,250	08/24/2001	Ralf Arnold	J&R-0714	2195

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EXAMINER
MILLER, CRAIG S

ART UNIT	PAPER NUMBER
2857	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

	Application No.	Applicant(s)
Office Action Summary	09/939,250	Ralf Arnold et al.
	Examiner	Group Art Unit
	Craig Steven M. Tle	2857

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____3_____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- [X] Responsive to communication(s) filed on _IDS filed 24 August 2001_
- [ ] This action is **FINAL.**
- [ ] Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- [X] Claim(s) _1-27_ is/are pending in the application.
    - Of the above claim(s) _____ is/are withdrawn from consideration.
- [ ] Claim(s) _____ is/are allowed.
- [X] Claim(s) _1-20 + 24-27_ is/are rejected.
- [X] Claim(s) _21-23_ is/are objected to.
- [ ] Claim(s) _____ are subject to restriction or election requirement

Application Papers

- [ ] The proposed drawing correction, filed on _____ is [ ] approved [ ] disapproved.
- [ ] The drawing(s) filed on _____ is/are objected to by the Examiner
- [ ] The specification is objected to by the Examiner.
- [ ] The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- [X] Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
    - [X] All [ ] Some* [ ] None of the:
        - [X] Certified copies of the priority documents have been received.
        - [ ] Certified copies of the priority documents have been received in Application No. _____ .
        - [ ] Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))
    - *Certified copies not received: _____ .

Attachment(s)

- [X] Information Disclosure Statement(s), PTO-1449, Paper No(s). _5_
- [X] Notice of Reference(s) Cited, PTO-892
- [ ] Notice of Draftsperson's Patent Drawing Review, PTO-948
- [ ] Interview Summary, PTO-413
- [ ] Notice of Informal Patent Application, PTO-152
- [ ] Other _____

Office Action Summary

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> *A person shall be entitled to a patent unless --*
> *(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

2. Claims 1, 2 and 8 are rejected under 35 U.S.C. § 102(b) as being anticipated by any of Miwa et al. (5,228,139), Cummins et al. (5,359,547) or Ogino et al. (5,416,919).

As to claims 1 and 2, Miwa et al. discloses at the bottom of col.7, "...*a test signal... is directly supplied to the internal bus 14 from the outside... Therefore, the operating condition of the functional module... can be simply confirmed...*", Cummins et al. discloses an external test system [22], Ogino et al. discloses CPU functional blocks which are testable externally, any of which comprise external devices which bring about an execution within a program-controlled unit (PCU) of at least one of initiation, performance or supporting the testing of the PCU.

As to claim 8, each of Miwa et al., Cummins et al. and Ogino et al. necessarily disclose such external communication.

3. Claims 4, 15, 17-20, 24, 26 and 27 are rejected under 35 U.S.C. § 102(b) as being anticipated by Cummins et al.

As to claims 4, 15, 17-19 and 24, Cummins et al. discloses in the abstract that the test code should be loaded from the external test system [22].

More particularly with respect to claim 24, it is clear that Cummins et al. supports the performance of an operation.

As to claims 20, 26 and 27, said claims are directed towards at least the test results being communicated to the external device. Cummins et al. discloses such status reporting starting at the bottom of col. 4.

4.   The following is a quotation of 35 U.S.C. § 103(b) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

5.   Claims 3 and 5-7 are rejected under 35 U.S.C. § 103(b) as being unpatentable over any of Miwa et al., Cummins et al. or Ogino et al. as applied to claim 1 above, each further in view of Tanaka et al. (US 2003/0182084 A1, PCT/JP01/05787).

As to claim 3, Miwa et al., Cummins et al. or Ogino et al. disclose the instant invention essentially as claimed with the exception that none of Miwa et al., Cummins et al. or Ogino et al. specify that the tests should be performed during and immediately after the production of the PCU. Tanaka et al. discloses that it is advantageous to test a program-controlled unit during production of the PCU (see abstract). The Examiner takes notice that it is known to test PCUs following production in general and that quality control tests in general are performed immediately following production. Therefore, because the devices of Miwa et al., Cummins et al., Ogino et al. and Tanaka et al. are within the art of PCU testing, because it is known to test PCUs following production and because it is known that quality control is commonly performed immediately following production completion, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include within any of the devices of Miwa et al., Cummins et al. or Ogino et al. the testing of the PCU during production as suggested by Tanaka et al. and that ordinary post-production PCU testing should be initiated immediately following production so as to receive the expected benefits derived there from such as enhanced production and reliability efficiencies, absent a showing of unexpected results or synergistic effect from any particular claimed combination.

As to claims 5 and 6, said claims are directed towards the use of a built-in self test unit storing and running a portion or entire self-test program within an onboard non-volatile memory during production. Miwa et al., Cummins et al. and Ogino et al. as modified above disclose performing self-

tests during production of a PCU but none specify that the test programs or portions thereof should be stored during the production of the PCU within a non-volatile memory within the PCU. The Examiner takes notice that it is known to include with a PCU programs for performing self-tests and that such programs are commonly stored as either of hard-code or flashed into non-volatile local storage. Therefore, because the devices of Miwa *et al.*, Cummins *et al.*, Ogino *et al.* as modified above are within the art of PCU testing, because it is known to self-test PCUs using locally stored programs within no-volatile machine readable storage, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include within any of the devices of Miwa *et al.*, Cummins *et al.* or Ogino *et al.* as modified above the self-testing of the PCU using locally stored program code or portions of code within local non-volatile memory in place of the disclosed boundary scan or external test code, each performing similar functions in similar ways, so as to receive the expected benefits derived therefrom such as enhanced production and reliability efficiencies, absent a showing of unexpected results or synergistic effect from any particular claimed combination.

As to claim 7, said claim is directed towards the starting of the test program by resetting the PCU. Miwa *et al.*, Cummins *et al.* and Ogino *et al.* as modified above disclose the initiation of test functions within a PCU but do not specify that a reset command should initiate said tests. The Examiner takes notice that it is known in general to initiate program execution using a reset command. Therefore, because the devices of Miwa *et al.*, Cummins *et al.*, Ogino *et al.* as modified above are within the art of PCU testing, because it is known to initiate similar programs through a reset command, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include within any of the devices of Miwa *et al.*, Cummins *et al.* or Ogino *et al.* as modified above the self-testing initiation of the PCU using known program initiation means such as a reset command in place of the disclosed program initiation signal, each performing similar functions in similar ways, so as to receive the expected benefits derived therefrom such as enhanced system reliability, absent a showing of unexpected results or synergistic effect from any particular claimed combination.

6.   Claims 9-12, 14, 16 and 25 are rejected under 35 U.S.C. § 103(b) as being unpatentable over any of Miwa *et al.*, Cummins *et al.* or Ogino *et al.*

Claim 9-12 and 16 are directed towards external communication being initiated by PCU availability through input and/or output terminals. Each of Miwa *et al.*, Cummins *et al.* or Ogino *et al.* disclose input/output terminals for external signal communications but do not specify that such communication comprises interrogation. The Examiner takes notice that it is known in general to use interrogation to facilitate inter-device communications. Therefore, because the devices of Miwa *et al.*, Cummins *et al.*, Ogino *et al.* as modified above are within the art of PCU testing including inter-device communication, because it is known to initiate similar communications through program interrogation, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include within any of the devices of Miwa *et al.*, Cummins *et al.* or Ogino *et al.* as modified above, program interrogation to initiate inter-device communication in place of the disclosed inter-device communication means, each performing similar functions in similar ways, so as to receive the expected benefits derived therefrom such as enhanced system communication reliability, absent a showing of unexpected results or synergistic effect from any particular claimed combination.

As to claim 14, said claim is directed towards external device communication through read/write registers within the PCU. Miwa *et al.*, Cummins *et al.* and Ogino *et al.* as modified above disclose inter-device communication within PCU testing but none specify that the communication should be comprised of register read/write communication. The Examiner takes notice that it is known to include within PCU inter-device communications such register inter-device communications. Therefore, because the devices of Miwa *et al.*, Cummins *et al.*, Ogino *et al.* as modified above are within the art of PCU testing, because it is known to self-test PCUs using locally stored programs including inter-device communication, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include within any of the devices of Miwa *et al.*, Cummins *et al.* or Ogino *et al.* as modified above known register inter-device communications in place of the disclosed bus communication, each performing similar functions in similar ways, so as to receive the expected benefits derived therefrom such as enhanced communication reliability, absent a showing of unexpected results or synergistic effect from any particular claimed combination.

As to claim 25, said claim is directed towards repeating test in either a defined or random order. The Examiner takes note that synergistic results or unexpected results are required to have invention by applying multiple means to receive multiple effects as illustrated in St. Regis paper Co. v. Bemis Co., Inc., 193 USPQ 8, 11 (7ᵗʰ Cir. 1977). The Examiner also take Notice that it is well known within the art of PCU testing to perform duplicative tests or plural test to prove circuit integrity and that it is inherent that if plural test are performed they are necessarily performed in one of defined or random order. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include within any of the devices of Miwa et al., Cummins et al. or Ogino et al. as modified above, the repeating in either a defined or random order, so as to receive the expected benefits derived there from such as enhanced system reliability, absent a showing of unexpected results or synergistic effect from any particular claimed combination.

7.   Claim 13 is rejected under 35 U.S.C. § 103(b) as being unpatentable over any of Miwa et al., Cummins et al. or Ogino et al. as applied to claim 1, 8 and 9 above, each further in view of Matsumoto (5,657,330).

Said claim is directed towards holding stably the data fed to the input and output terminals during the PCU tests. Matsumoto discloses at the top of col. 7 that the input and output data should be stored during the PCU tests and restored after PCU test completion. Therefore, because the devices of Miwa et al., Cummins et al., Ogino et al. and Matsumoto are within the art of PCU testing, because Matsumoto discloses that the PCU pre-test state should be preserved for post-test operation, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include within any of the devices of Miwa et al., Cummins et al. or Ogino et al. the preservation of pre-test PCU state as suggested by Matsumoto, so as to receive the expected benefits derived there from such as enhanced system reliability, absent a showing of unexpected results or synergistic effect from any particular claimed combination.

8.   Claims 21-23 are objected to as being dependent upon a rejected base claim, but would be
allowable if rewritten in independent form including all of the limitations of the base claim and any
intervening claim(s) or if said rejection(s) were overcome.

9.   The prior art made of record and not relied upon is considered pertinent to applicant's
disclosure.

> Sato *et al.* (4,305,125) discloses dual normal/test operation processing system.
> Tanaka *et al.* (4,975,641) discloses a testable IC.
> Yoshida *et al.* (5,226,149) discloses self-testing PCUs with code manipulation.
> Nagaishi (5,291,425) discloses PCU test mode setting.
> Harenberg *et al.* (5,544,311) discloses an on-chip debugging port.
> Daito (5,557,558) discloses PCU self testing.
> Gaglani (5,900,739) discloses a test mode of an externally non-programmable device.
> Kukutsu *et al.* (5,940,783) discloses PCU testing.
> Lysinger (5,982,188) discloses test mode control.
> Takahashi (6,125,456) discloses PCU self testing.
> Ziegler *et al.* (6,158,021) discloses PCU testing.
> Lueders (6,229,328 B1) discloses IC testing.
> Daudelin *et al.* (6,591,389 B1) discloses IC self-testing.
> Hewlett Packard (DE 019947603 A1) discloses testing PCUs during manufacturing.

10.   Any inquiry concerning this communication or earlier communications from the Examiner
should be directed to Craig Steven Miller whose telephone number is (703) 305-9730. Art Unit
facsimile services are now available at (703) 308-7722.

      The Examiner can normally be reached on Mondays through Fridays from 07:30am-4:00pm
EST. Should repeated attempts to reach the Examiner be unsuccessful, the Examiner's Supervisor,
Marc Hoff may be reached at (703) 308-1677.

      Any inquiry of a general nature or relating to the status of this application should be directed to
the Group receptionist whose telephone number is (703) 308-0956.

Craig Steven Miller (ss)
05 November 2003

MARC S. HOFF
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